Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended):   A ~~position/force~~ position and force control device, comprising:

(i) position detection means for detecting a position of an object;

(ii) driving means for driving the object;

(iii) reaction force detection means for estimating a reaction force which the object receives, where the reaction force is detected indirectly based on a position signal outputted from the position detection means and a driving signal applied to the driving means and where frictional force and inertia variation on the object are subtracted as known values; and

(iv) control means for calculating a first acceleration signal from the reaction force which the object undergoes and a goal force signal, and further calculating a second acceleration signal from the position signal and a goal position, and outputting a generated driving signal to said driving means, the generated driving signal being based on said first and second acceleration signals.

Claim 2 (currently amended):   A ~~position/force~~ position and force control device for controlling a position of an object and force on the object in response to position command signals and force command signals, comprising:

(i) driving means for driving the object;

(ii) position detection means for detecting a position of the object;

(iii) reaction force detection means for estimating a reaction force undergone by the object, where the reaction force is detected indirectly based on a position signal outputted from the position detection means and a driving signal applied to the driving means and where frictional force and inertia variation on the object are subtracted as known values;

(iv) first calculation means for calculating a difference between a position command signal and a position signal outputted by the position detection means and converting the difference to a first acceleration signal;

(v) second calculation means for calculating a second difference between the reaction force detected by the reaction force detection means and a force command signal and converting the second difference to a second acceleration signal; and

(vi) control means for adding the said first and second acceleration signals and outputting a generated driving signal to the driving means, the generated driving signal being based on said first and second acceleration signals.

Claim 3 (currently amended): A ~~position/force~~ position and force control device for controlling positions of an object on a slave side and of an operation part on a master side in response to a position difference between the operation part on the master side and the object on the slave side to drive the object with driving force in response to an operation force on the master side and transmit a reaction force of the slave side to the master side, comprising:

(i) first driving means for driving the operation part on the master side;

(ii) first position detection means for detecting a first position of the operation part on the master side;

(iii) first reaction force detection means for estimating a first reaction force acted on the operation part, where the first reaction force is indirectly detected based on a first position signal outputted from the first position detection means and a first driving signal applied to the first driving means;

(iv) second driving means for driving the object on the slave side;

(v) second position detection means for detecting a second position of the object on the slave side;

(vi) second reaction force detection means for estimating a second reaction force undergone by the object, where the second reaction force is indirectly detected based on a second position signal outputted from the second position detection means and a second driving signal applied to the second driving means;

(vii) first calculation means for calculating a difference between the first position signal outputted by the first position detection means and the second position signal outputted by the second position detection means and converting the difference to first and second acceleration control signals for controlling the master side and the slave side;

(viii) second calculation means for calculating a sum of outputs of the first and the second reaction force detection means, and converting the sum to third and fourth acceleration control signals for controlling the master side and the slave side;

(ix) first addition means for adding the first and the third acceleration control signals;

(x) second addition means for adding the second and the fourth acceleration control signals;

(xi) first control means for outputting a first generated driving signal to the operation part on the master side based on an output of the first addition means; and

(xii) second control means for outputting a second generated driving signal to the object on the slave side based on an output of the second addition means.

5. (new) The position and force control device of claim 1 wherein the reaction force detection means comprises at least two reaction force estimation observers, wherein the reaction force estimation observers indirectly sense reaction forces based on the driving signal and the position signal.

6. (new) The position and force control device of claim 2 wherein the reaction force detection means comprises at least two reaction force estimation observers, wherein the reaction force estimation observers indirectly sense reaction forces based on the driving signal and the position signal.

7. (new) The position and force control device of claim 3 wherein the first and second reaction force detection means each comprise a force estimation observer that indirectly senses reaction forces based on the first driving signal and the first position signal or the second driving signal and the second position signal respectively.